INTERCOM

WILLIAM J. HUGHES TECHNICAL CENTER

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CFC CAMPAIGN BREAKS ACT RECORD!

The Tech Center once again had a prosperous CFC campaign for the season. Director **Anne Harlan** set this year's goal at $75,000, $5,000 more than last year. The Center got off to a slow start, but finished strong, collecting $112,168. CFC Key Workers collected most of this through payroll deductions.

The Staff and Division offices also collected a significant amount, holding special fun fundraising events, such as: an ice cream sundae sale given by the Director's Staff and Management Team; and AAR-400 had a chili cookoff and pretzel sale. There were also bagel sales, submarine sandwich sales, flea markets, and many raffles for various prizes. ACT-70 held a raffle for airline tickets that netted the largest event total this year, just squeaking by ACT-500, who held a Polar Fun Run/Walk in bitter cold and windy conditions. In all over 16 events were hosted to make this year's CFC a success.

Thanks go out to ACT-600's **Dave Maslanka**, CFC Chairman, and **Maria Lemmetti-Fane**, Keyperson and Events coordinator. Special thanks go to **Mike Bralski** (ACT-30) who had the endless task of collecting the pledge slips, making corrections, counting the money, and forwarding it all to the United Way for processing. Most importantly, thanks to the many generous employees of the Tech Center who made the event a success by donating to the CFC.

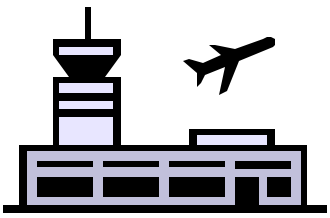
FREQUENT FLYER TICKET SAVINGS PROGRAM EXPANDED

Steve Zaidman, the Associate Administrator for Research and Acquisitions (ARA-1) has approved the Frequent Flyer Ticket Savings Program, piloted by ACT, for all ARA employees.

The Tech Center is presently coordinating with the appropriate offices at headquarters, and plans to have the program ready for implementation soon. Employee orientation sessions will be scheduled in the near future.

The program provides incentive awards for employees who save ARA money while on official Government travel. To be eligible for an award under this program, each employee is personally responsible for administering his or her own program. This includes registering for frequent flyer programs with the airlines and obtaining free tickets from the airlines when eligible.

ARA employees who obtain a free coach class ticket with frequent flyer benefits earned on official government travel are eligible for a travel savings award. The amount of the award for each employee will be 50 percent of the savings on the contract carrier airfare.



Are you a frequent flyer? If so, you should contact your frequently traveled airline now and ask for an application to become a Frequent Flyer Member.

EMPLOYEES "MUGGED" AT ACT

The Office of Aviation Research (AAR) has a little tradition . . . when one of its employees goes that extra mile to make the organization and the agency look good, AAR likes to tell the world. One way they do that is to "mug" the employee - give them the special AAR mug of recognition, so that every day when they have their morning coffee they are reminded just how much AAR appreciates their good work. In keeping with this tradition, on February 23, Herm Rediess (AAR-1) and Hugh McLaurin (AAR-2) traveled to the Tech Center to "mug" AAR employees. Those recognized for a job well done included:

Rich Lyon (AAR-422) in recognition of his November 9, 1999, patent award for a Microscale Combustion Calorimeter. The calorimeter requires only milligram samples to measure the heat release rate of cabin materials during flaming combustion. This device provides valuable data to polymer scientists developing ultra fire-resistant materials because they can synthesize only minute quantities of new polymers, at great cost, during the initial stages of their research.

Bill Cavage (AAR-422) for his valuable contributions to recent FAA research related to fuel tank explosion protection. He headed a study to compute the entire costs associated with a ground-based fuel tank inerting system. He also conducted tests on a prototype fuel tank inerting system, employing hollow fiber gas separation membrane technology, which is believed by many to be the most promising technology for this application. It is noteworthy that Bill has been a full-time federal employee for less than one year.

Paul Boris (AAR-421) for the work he has done in support of establishing a standard for laboratory qualification/determination of holdover times for deicing fluids. This work represents a significant international effort involving many of the world's airlines, fluid manufacturers, testing laboratories, aircraft manufacturers, atmospheric research organizations, and regulatory authorities.

Gerald Walter (AAR-432) in appreciation of his outstanding efforts in obtaining hundreds of jet fuel samples from various air carriers at Philadelphia, JFK, and Newark airports, transporting them back to the Tech Center, and then performing analyses of properties of these fuel samples.

Dy Le (AAR-431) for his outstanding efforts in working with academia, industry, and other government agencies to develop a technology roadmap for a critical need of the FAA Southwest Region, the sponsor. The roadmap identifies critical technology requirements for implementing damage tolerance in rotorcraft industry.

Chris Smith (AAR-433) for his outstanding leadership of the new research area of Aging of Nonstructural Systems in drafting two new research project descriptions, developing a program area plan, and working closely with the FAA Northwest Mountain Region, the sponsor.

Thomas Flournoy (AAR-430) for his outstanding efforts in organizing and serving as chairperson for the 3rd Joint FAA/DoD/NASA Conference on Aging Aircraft. The conference, held in September 1999, was extremely successful with over 640 participants.

Jason Reap (AAR-540) for his dedication and willingness to volunteer to be at the Tech Center over New Years 2000. He was one of our "Day One Team" working on the biggest New Year celebration in history.

Tama Nelson (AAR-540) for her secretarial support for the past few months. She has done a terrific job as branch and acting division secretary, eagerly accepting additional work without complaint and has volunteered to fill in when others were not available. She set up a branch office from scratch, is always pleasant, and supports the goals and objectives of the FAA and the Model Work Environment Program by participating in team meetings.

MUGGINGS AT ACT

Ray Schillinger (AAR-530) for the outstanding work he has done on the MANPADS Program. This Program looks at the threat to civil aviation from Manually-operated Portable Air Defense Systems (weapons that could shoot down a plane from the ground). He has conducted several field tests and assessments of various types of hardware, both foreign and domestic, and has written several reports on his findings. His ability to work closely with his counterparts in the Defense Department demonstrates how valuable an asset he is to the Aircraft Hardening Program and to civil aviation security in general.

Mike Snyder (AAR-510) for his work as the lead for execution of the Directed Trace Laboratory study. The results of the test will provide critical data to agency's Civil Aviation Security Office (ACS) necessary to determine the efficacy of directed trace as an alternative to explosives detection systems.

Mike Barrientos (AAR-510) for his work as the lead for development and execution of the test of Threat Image Protection X-ray (TRX) equipment. Mike's team evaluated the TRX equipment against stated functional requirements. This data directly supports an acquisition and deployment decision of the Security Equipment Integrated Product Team in meeting FAA deployment goals.

Rick Lazarick (AAR-510) for his work leading the Vulnerability Assessment Project supporting ACS operations. Rick's work was critical to establishing a standardized assessment tool that can be used by domestic airports to perform vulnerability assessments.

Patti Ireland-Long (AAR-510) for her excellent support to the division in its time of limited secretarial support. During this time she helped train four new secretaries, while still accomplishing the work in her own branch.

Buzz Cerino (AAR-510) for leading AAR-500's Y2K work. He also served as one of the volunteers who worked at the Tech Center over New Years 2000.

John Tye (AAR-540) for his work in ensuring AAR-500 had the unique resources to conduct a high profile "pop up" test to generate data on the value of using "directed trace" for explosives detection. He rapidly canvassed resources within the Department of Navy to borrow the necessary chemical-biological agent protective shelters, and then set them up within the Aviation Security Laboratory to provide a sterile environment for sensitive trace detection explosive measurements.

Congratualtions to all the "muggees" and keep up the great work!!

HEADQUARTERS HEADLINES

FAA Awards Important Data Link Contract. In support of the Department of Transportation's commitment to improve safety, on February 4, the FAA awarded a multi-million-dollar contract to Computer Sciences Corp. (CSC) of Rockville, MD, to begin the software development and implementation of the Controller-Pilot Data Link Communications (CPDLC) Build 1A project.

En Route CPDLC is key to easing traffic congestion, allowing traffic growth, and enhancing safety. It will not only provide more efficient, automated communications between controller and pilot, it will reduce operational errors resulting from misunderstood voice communications. Designed to supplement air/ground communications while reducing voice communications between controller and pilot, it transmits digital non-time-critical information on a separate frequency.

CPDLC Build 1A will be deployed at the key site - the Miami Air Route Traffic Control Center, currently planned for June 2003 with national deployment beginning six months later at the 19 other air route traffic control centers. The FAA will implement CPDLC in phases, which will provide early benefits to users with CPDLC-equipped aircraft.

Continued on page 9

ACT RESEARCHER PLAYS KEY ROLE IN NEW HUMAN FACTORS GUIDE FOR AIR TRAFFIC CONTROLLERS

In an effort to bring the results of human factors research to air traffic controllers in a format that is straightforward and easy to read, the Federal Aviation Administration (FAA) has released "Human Factors for Air Traffic Control Specialists: A User's Manual for Your Brain."

The 46-page booklet is divided into 5 easy-to-read and well-illustrated chapters designed to provide quick tips on how to enhance the factors that contribute to or influence controller performance:

1. An Elephant Might Never Forget, but We're Not That Lucky: How to Make the Most of the Memory You Have

2. Controller-Pilot Communications: How to Talk to Pilots so They'll Hear What You Want Them to Hear

3. Know Your Limitations: How to Recognize Common Threats to Performance

4. Fatigue Busters: Tips for Sleeping Better and Maintaining Alertness on the Job

5. Did You Know That . . . ? Tips for Maintaining Your Hearing and Sight

"This is an excellent tool for controllers," said **Dr. Earl Stei**n (ACT-530) who helped prepare the guide. "It not only provides ideas on how to enhance performance, but explains why such changes may improve safety in the national airspace system."

For example, in a study of incident reports submitted by pilots and controllers, multiple instructions given in the same air traffic control transmission were associated with 49 percent of altitude deviations and 48 percent of the potential altitude deviations. To help prevent miscommunications between controllers and pilots, the guide recommends "that whenever possible, controllers should give pilots no more than 3 pieces of information in a single transmission." This is important because the complexity of the controller's transmission has a direct effect on the pilot's ability to remember it.

Stein's controller memory handbooks served as a model for this job aid. Those handbooks were published in 1989 and 1994, respectively. Authors based the content on interviews with current controllers. They used used graphics and humor to convey key ideas about avoiding errors based on memory lapses.

Sponsored by the FAA's Office of the Chief Scientific and Technical Advisor for Human Factors, the guidebook was a collaborative effort of the Department of Transportation Research and Special Programs Administration's Volpe National Transportation System Center, the FAA's William J. Hughes Technical Center and Civil Aeromedical Institute, and the National Air Traffic Controllers Association.

The document (DOT/FAA/AR-99/39) is available to the public through the National Technical Information Service, Springfield, VA 22161, or by contacting Kim Cardosi at cardosi@volpe.dot.gov.

For more information about the work of ACT-530's Human Factors specialists, see thei website at www.tc.faa.gov/act-30/hfl/products_index.htm.

Policy Statement on Contractor Use of the FAA Air Shuttle Service

- FAA contractors, who are reimbursed by the FAA for travel costs incurred under their contract, can travel on the FAA Air Shuttle Service between the Technical Center and Washington, D. C. Included are cost reimbursement contracts or fixed price contracts which contain a line item for reimbursable travel costs. Any questions on whether a particular contract is included should be directed to the contracting officer responsible for the contract.

- A Contractor Authorization Data Sheet is required in lieu of travel orders. The Contracting Officer's Technical Representative (COTR) must approve this travel authorization. The form can be acquired from the shuttle web page (http://www.tc.faa.gov/shuttle) or by calling the WJHTC Operations Center at (609) 485-6482.

- Reservations are on a first-come first-serve basis for all official travelers (DOT/FAA/Contractors).

- For information and any questions about the shuttle services, call Frank Hines, Shuttle Management, on (609) 485-5670.

NEWS FROM AROUND THE CENTER

ACT-51 Contracts Branch welcomes the following new personnel: Pre-Award Section Manager **Jose Benitez**; Post-Award Section Manager **Robert Loftus**; Contracting Officers **Debra Stuart** and **Cynthia Hische**; Procurement Technician **Debra Monzo**; and detailees **James Crawford** and **Jeanine Pierce**.

AAR-500 welcomes **Dr. Sheldon Brunk**, a research chemist in the Trace Detection Program. Before arriving at AAR, he owned his own forensic toxicology consulting business in Memphis, TN. Prior to that time, he worked for over 15 years in the medical laboratory field, serving as laboratory director of clinical chemistry and toxicology labs. He is a member of several professional societies, including the American Chemical Society and the American Academy of Forensic Sciences. He received a Ph.D. in Analytical Chemistry from the University of Illinois in 1978.

AAR-500 also announces the formation of a new branch, the Security Equipment Acquisition and Deployment Branch (AAR-550). This addition came about following a recent AAR and ACS change to the Security Equipment Integrated Product Team (SEIPT). The SEIPT Lead now reports directly to the Office of Civil Aviation Security Policy and Planning, since the Associate Administrator for Civil Aviation Security now has responsibility for the SEIPT programmatic and technical direction, and aviation community and Congressional issues. The SEIPT's acquisition authority, however, remains with the agency's Acquisition Executive (ARA-1). With the exception of the Lead, SEIPT employees have been assigned to AAR-550. The AAR-550 branch manager now serves as the IPT deputy lead. **Jim Farrell** is the acting AAR-550. The SEIPT will remain in Herndon, VA.

JOINT SERVICES REVIEW COMMITTEE FOR AVIONICS STANDARDIZATION (JSRC-AS)

The Tech Center hosted the latest meeting of the Joint Services Review Committee for Avionics Standardization on February 3-4. Representatives from the Office of the Secretary of Defense, the Army, Navy and Air Force joined FAA representatives to share information, to address issues of common interest, and to discover opportunities for partnering and leveraging resources.

(JSRC-AS) CONT.

The military services surfaced an emerging problem and requested FAA's assistance. With the advent of global standards for communications and navigation, foreign nations desire certification of all U.S. aircraft entering their airspace. Since avionics for DoD aircraft do not utilize the FAA certification process for many of their aircraft (especially fighters and bombers), this presents a problem. The committee assembled a team, led by FAA, to seek possible solutions to this problem.

The military services also requested increased FAA participation in the Global Air Traffic Management (GATM) program to standardize avionics suites across DoD platforms. GATM was originally budgeted at $9 billion to modernize avionics. The military is especially interested in FAA's Next Generation Air/Ground Communications (NEXCOM), Flight Information Services, ADS-B, and DataLink programs. These CNS programs present more affordable solutions to technology upgrades in the military and COTS available technology for DoD transports.

After the meeting, the Navy invited **Chris Smith** (AAR-433) to meet with their Program Managers for aging wiring. Chris met with the Navy managers and shared FAA's plan for research into aging avionics.

OUR TEAM IS UNIQUE! ONE OF A KIND AT THE TECH CENTER

In January 1999, the ACT-200 Management Team challenged their secretarial staff to develop a process to provide detail and training opportunities for the secretaries, with minimal work disruption in their branches and to address freely their concerns to the management team.

With the support of the management team, the Administrative Process Improvement Team (APIT) attended Team Building sessions at CMD, becoming a more cohesive unit and eager to immediately implement their exchanged ideas upon their return to the Tech Center. They developed a twofold work distribution scheme to enable the secretary to perform three month details, outside her duties, and to acquire and develop the knowledge and skills required to prepare themselves for career change. The detailed individual's work is evenly distributed among the team members during the period of detail to ensure timely customer service and alleviate work backlog.

A detail selection process allowed team members to decide which detail they desired. The detail period is currently three months. The team recommended increasing the detail period to six months. Over the past year, detail opportunities included: computer specialist; administrative specialist, and webmaster. Under the Model Work Environment (MWE) concept, we will continue to seek out detail opportunities to fully develop our potential in the agency.

APIT Team Members included:
Jean Komeskie, Division Secretary
Patricia D. King, Deputy Division Secretary
Darleen Laney, Terminal Branch Secretary
DeAnne Martinez, Tower/FSS Branch Secretary
Carma Belton, Enroute Branch Secretary
Mary Carpenter, Enroute Branch Secretary
Diana Neuman, Oceanic Branch Secretary
Joan Feuerstein, Traffic Flow Management Branch Secretary
Shirley Moore, Systems Engineering Branch Secretary

CENTER TEAM HELPS DEVELOP INNOVATIVE DEICING FACILTY

In 1994 the Tech Center created a partnership with a small Buffalo, NY, firm that had an idea for deicing airplanes that went against conventional wisdom. Process Technologies Inc. (PTI) had a total of three people, a hand-held contraption that melted ice cubes in a Buffalo garage, and an enormous amount of enthusiasm and perseverance.

Boeing 757 inside Newark infrared deicing facility.

On February 15, 2000, PTI (now known as Radiant Energy Corp) officially opened an infrared deicing facility for Continental Airlines at Newark International Airport. This facility is large enough to deice the Continental fleet up to and including a Boeing 757.

The technology behind this innovative system is as old as the sun itself. It uses infrared energy to warm an object in the same manner as the sun warming your skin on a cold winter day. Specially designed burners to heat pipes to a point at which they emit infrared energy "tuned" to the absorption range of ice. This energy behaves like a beam of light except that it warms rather than illuminates objects in its path.

The FAA's Technology Team of **jennelle Derrickson** (AAR-400), **Marie Denan** (AAR-400), and **Pete Sparacino** (now AAR-410) put together a Cooperative Research and Development Agreement

NEW DEICING FACILITY CONT.

Dale Dingler, Marie Denan, Ron Meilicke, Jim White, Bob Maier (RAS), jennelle Derrickson, and Pete Sparacino pose next a Boeing 757 inside the infrared deicing facility.

(CRDA) with PTI in 1994. This CRDA gave **Jim White** (AAR-411) the opportunity to comb the Tech Center for people and resources to fuse with the industrial know-how and fiscal resources gathered by PTI.

Over the next three winters **Armando Gaetano** (ACT-370) and test pilots **Mark Ehrhart** and **Keith Biehl** (both ACT-370) provided a mix of FAA test aircraft for a series of deicing demonstrations. Jim, Armando, and the pilots worked many frigid nights in Buffalo and Rochester, NY, with the PTI crews as they demonstrated to the aviation community the effectiveness of their deicing system. Every step of the way the **Imaging Specialists from ACT-73** captured the events on film and videotape.

The Newark facility is the third infrared system to go on-line. Buffalo claims the first system (1997) followed by Rhinelander, WI (1998). These facilities are sized for business and commuter airplanes. With Newark, infrared deicing has moved up to the big leagues. But all three provide a chemical-free method for deicing aircraft.

Although the CRDA with PTI is history, the dividends continue. And there is one more FAA chapter to this story. George Legarreta (AAS-100) is preparing the Advisory Circular language that will make systems like the one at Newark eligible for federal support. Airports across the country (and the world for that matter) now have another way to keep winter flight safe for both the passenger and the environment.

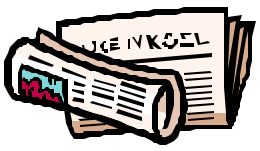
A crowd gathers as NJ Senator Frank Lautenberg prepares to cuts the ribbon, opening the new facility.

HEADQUARTERS HEADLINES CONT.

FAA Appoints McCullough to Head CNS Division. Carl McCullough is the new director of Communications, Navigation and Surveillance Systems (AND-1), an office that manages the development and deployment of avionics and air traffic control equipment. McCullough's appointment became effective January 1, 2000.

McCullough joined the FAA in 1993 to manage various major acquisitions, including terminal doppler weather radar. He later became the product lead for satellite navigation systems, including such programs as the Wide and Local Area Augmentation Systems. In August 1999, he was selected for a FAA executive service position as deputy director of the Office of Air Traffic Systems Development, a position he held until his most recent appointment.

A native Oklahoman, McCullough is a graduate of the U.S. Naval Academy and the Naval Postgraduate School. He served 24 years as a naval aviator. Upon completion of his military career in 1990, McCullough joined McDonnell Douglas Helicopter Company as general manager of the MD-500 Light Helicopter program. Immediately prior to joining the FAA he served briefly as vice president of RAIL Company's eastern region. RAIL is a defense support contractor.



SAFETY NEWS

FROM THE SAFETY OFFICE, ENVIRONMENTAL BRANCH (ACT-640)

THE HANDY RAIL

They are sleek and long, and they are there to support you whether you're at the top or at the very bottom. They are there for you when you've had a bad day and when you're very tired. In fact, for some people they are real lifesavers! Today's topic is on handrails. No, it's not a misprint, the topic is handrails!

You may have never thought about them, but handrails have many unique characteristics some of which we have mentioned above. Most people use Handrails everyday without ever acknowledging their presence -- they were designed to be functional, yet inconspicuous. The intent of this safety article is to change the image of handrails and to increase your appreciation of them. Take a minute or two to ponder a few Handrail attributes that we have list below:

- Handrails dutifully accept hand outs.
- Handrails reside on the edge to keep you balanced.
- Handrails are right handed.
- Handrails are forgiving, even when you're pulling your weight.
- Handrails are very productive in the fall and throughout the year too.
- Handrails are straightforward, they don't like it when you 're using them to slide by.

Now that you have been introduced to the many attributes that handrails possess, I hope you will give them some thought. The best way to do that is to give them a hand!

ACT HOSTSAVIATION CONFERENCE FOR FIRE SERVICE

For the second year in a row, the Tech Center hosted the Aviation Committee of the Northeastern Area Forest Fire Service for their 2000 Aviation Conference and Workshop. The Co-Chair of the Northeast Area States Aviation Committee said that he requested to be at the Center because of the its excellent facilities and the functional tie between the Center and the conference subject matter.

The basis of the conference was public aviation. All government agencies that have aviation programs are operators of public aircraft and the states that have forestry programs have been meeting for years to discuss issues that are relevant to public aviation.

Carleen Genna-Stoltzfus (ACT-70) and **Ron Esposito** (ACT-3) coordinated the conference. In welcoming remarks, Ron mentioned some of the common interests shared by both the Center and the Forest Fire Service. The Forest Fire Service also set some time aside to tour the Security Lab, National Airport Pavement Test Facility, Federal Air Marshals, Fire Safety Research Facility, Crashworthiness Drop Test Facility and the Airway Facilities Tower Integration Lab.

HUMAN FACTORS EFFORTS TO SUPPORT CERTIFICATION OF SCREENING COMPANIES

A recently released FAA Notice of Proposed Rulemaking (NPRM) proposes to require all companies that perform aviation security screening to be certified by the FAA and to meet enhanced requirements. Many of these requirements are predicated on the ongoing human factors research that has been conducted at the Tech Center by the Aviation Security Human Factors Program (AAR-510).

The NPRM is in direct response to recommendations by the White House Commission on Aviation Safety and Security and to a Congressional mandate in the Federal Aviation Reauthorization Act of 1996. This act, signed by the President asPublic Law 104-264, specifically states: "The Administrator of the Federal Aviation Administration is directed to certify companies providing security screening and to improve the training and testing of security screeners through development of uniform performance standards for providing security screening services."

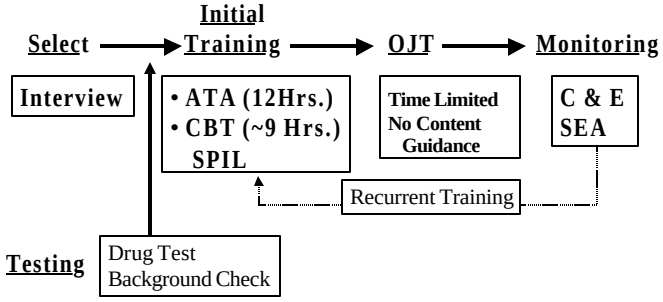
This approach represents a greater emphasis on the role of security screening companies and their employees in the civil aviation security system.

A brief review of the current approach to security screening in the United States is offered to provide a context for the anticipated changes that will result from the screening company certification rule. Currently, the Administrator is required to prescribe regulations to protect passengers and property on aircraft against acts of criminal violence or aircraft piracy. The protections include searches of people and property that will be carried aboard aircraft to ensure that they have no dangerous weapons, explosives, or other destructive substances (49 U.S.C. 44901-44903). These screening operations are prescribed in rules in Part 108 of Title 14 of the Code of Federal Regulations, which contains specific rules for air carrier screening operations.

These rules are further delineated in a non-public security program, the Air Carrier Standard Security Program (ACSSP), between the FAA and the air carrier. Overall, there are several means by which a carrier can conduct screening (e.g., use its own employees, contract with a screening company, or contract with another carrier to conduct screening) and in each case the carrier is required to provide oversight to ensure that all FAA requirements are met.

The current regulatory approach focuses primarily on the role of the air carrier rather than the security screening company (note that the majority of air carriers contract out the screening function since it is not one of their core competencies). The FAA is aware of increasing threats of terrorism against civil aviation and intends to enhance further the approach that is currently used. The current approach to selecting, training, and monitoring the performance of security screening personnel is presented below.

Current Paradigm



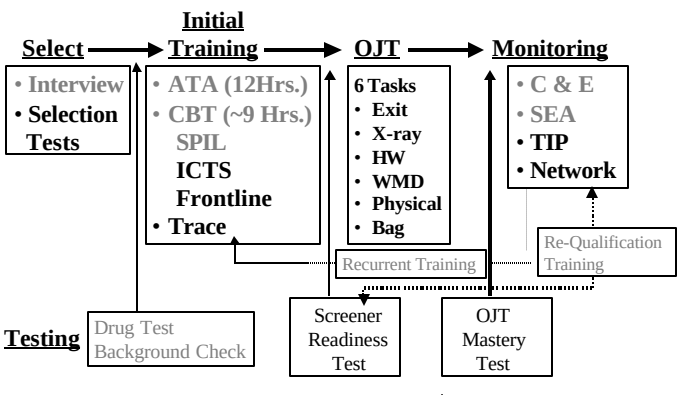
Screeners are currently selected via unstructured interviews, generally after responding to a newspaper advertisement. The applicant must pass a drug test and a background investigation before beginning initial screener training. In most instances, this training is 12 hours of classroom instruction based upon a FAA-approved Air Transport Association (ATA) syllabus. After completion of a paper-and-pencil test, the trainee spends a period of time in on-the-job training (OJT) at the checkpoint during which there is no independent judgement for screening passengers or belongings.

HUMAN FACTORS EFFORTS TO SUPPORT CERTIFICATION OF SCREENING COMPANIES CONT.

After a period of time under supervision the trainee becomes a full-fledged screener and commences duties at the checkpoint. To monitor performance, undercover field agents conduct ongoing tests. This undercover compliance and enforcement (C&E) testing may result in fines to the air carrier and recurrent training for screening personnel. Security personnel are also required to attend recurrent training every year.

The recently released NPRM will have great impact on security screening in the United States and it will directly alter the current paradigm of screener selection, training and monitoring. The NPRM has two objectives: to propose procedures for certification of screening companies, and to propose other requirements to improve screening. The latter are based on results from the ongoing program of Aviation Security Human Factors Research at the Tech Center. These improvements are reflected in in the diagram below, the enhanced paradigm for screener selection, training, and monitoring.

Enhanced Paradigm



The proposed regulatory approach will focus jointly on the role of the air carrier and the security screening company to further enhance security. Under this new approach, screeners will be selected via interviews with input from FAA validated selection tests. The Aviation Security Human Factors Program has been working for the past several years to customize and validate computerized non-verbal test of job applicant aptitude for threat detection using X-ray equipment. The challenge has been to develop valid, reliable, non-biased, and cost-effective tests that predict screener performance. This effort will culminate in useful tools for security companies to employ in selecting qualified job candidates.

The human factors program has also been working with industry to support development of enhanced training presented via computer. The major benefits of computer-based training (CBT) are self-paced instruction, rigorous testing, standardization of presentation, and extensive practice and exposure to sophisticated threats. This ongoing effort has resulted in the availability of sophisticated CBT programs from three independent vendors. The use of state-of-the art training approaches and technologies holds great promise to efficiently and effectively teach new screeners the critical knowledge and skills they will need at the checkpoint.

A major human factors effort this past year has been to develop a FAA-approved and controlled test that will determine screener master of initial training prior to their checkpoint apprenticeship (i.e., OJT). This Screener Readiness Test (SRT) will assess screener knowledge of security background, rules, and procedures, as well as, their proficiency at X-ray threat detection. The SRT will feature multiple choice and image interpretation questions sample randomly from a large pool of items. Recent field testing with more than 350 screeners across the U.S. indicated that the test is reliable, valid, and non-biased.

A comparable effort is underway to develop and validate a test to determine the mastery of OJT skills and abilities. It is expected that this test will permit specific qualification by piece of equipment (e.g., X-ray machines; explosive trace detectors), similar to a pilot type rating. The OJT Mastery Test will be the final hurdle prior to a screener taking a position at a security checkpoint. The combination of these two tests will be powerful tools to ensure that screeners have mastered their training and that they are fully prepared for the rigors of their job.

The final human factors component to support the certification of screening companies is enhanced

HUMAN FACTORS EFFORTS TO SUPPORT CERTIFICATION OF SCREENING COMPANIES CONT.

performance monitoring. The Aviation Security Human Factors Program has been working for the past several years to develop and deploy Threat Image Projection (TIP) to monitor screener performance. TIP has significant potential benefits and it is a critical component of the proposed rule. The TIP system uses two different methods of projection (i.e., fictional threat images and combined threat images) to superimpose threats into the stream of passenger baggage at a checkpoint. The Fictional Threat Image superimposes a threat image (e.g., a gun) from an extensive library of images on to the X-ray image of actual passenger baggage being screened. The image appears on the monitor as if a threat object actually exists within the passenger's bag. The screener can check whether the image is an actual threat image before requesting that the bag be screened further. The Combined Threat Image is a prefabricated image of an entire threat bag and also can be electronically inserted onto a display monitor. For both types of images, screeners are immediately given feedback on their ability to detect threats. TIP exposes screeners to threats on a regular basis to train them to become more adept at detecting threats and to enhance their vigilance. TIP also allows the FAA to expose screeners to the latest potential threats and to provide valuable information about detection performance.

Overall, the robust and proactive Aviation Security Human Factors Program has been working to develop approaches and interventions to further enhance the human contribution to civil aviation security. The program continues to focus its research on the attributes, skills, and abilities that make for an effective security screener. As advanced security technologies are being fielded, the importance and dependence on the human operator has become increasingly critical. Careful consideration of human factors issues in aviation security supports the proposed certification of screening companies and the central goal of protecting the flying public from terrorist threats.

For additional information on the security human factors program, contact **Dr. Eric Neiderman** at (609) 485-4360.

LITTLE FLYERS ACADEMY TAKES OFF

The NAFEC Association recently held a "Name the Child Care Center" contest. According to Deborah Cook, President of NAFEC Association, Inc., "out of over 150 entries, the NAFEC Association Child Care Center Board of Directors selected Little Flyers Academy." **Michael King** (ACT-31) won the $100 first prize for suggesting this name. **Al Oswald** (ACT-300) won the second prize, two VIP tickets to Morey's Piers of Wildwood, NJ.

Ms. Cook reports that the child care center "will be transitioning to the new name and hope to have it in place by the start of the new school year." She is

grateful to all who participated in the naming contest and thanks the ACT community for their continued support of the facility.

REDAC MEEETING

The next meeting of the FAA's Research, Engineering and Development Advisory Committee (REDAC) is April 11-13, 2000, at the Holiday Inn Rosslyn Westpark Hotel. For meeting information, contact Gloria Dunderman at (202) 267-8937 or via email at gloria.ctr.dunderman@faa.gov.

The REDAC, established in 1989, advises the Administrator on research and development issues and coordinates the FAA's research, engineering and development activities with industry and other government agencies. The committee considers aviation research needs in air traffic services, airport technology, aircraft safety, aviation security, human factors, and environment and energy. Dr. Herman Rediess, FAA's Director of Aviation Research, serves as the executive director of the committee. Mr. Robert E. Doll, President of Tech/Ops International, Inc., currently serves as the committee chairman.

For additional information on the Committee, please see their website at http://research.faa.gov/aar/redac.cfm.

SCHOLARSHIP OPPORTUNITY

The Technical Women's Organization (TWO) newsletter, *The Circuit*, reports that the Federal Employees Education and Assistance Fund, a Combined Federal Campaign charity, is accepting applications through March 31for scholarships for the school year that starts in the autumn. Scholarships ranging between $300 and $1500 are available to Federal and Postal employees and family members. For an application form, send a self-addressed stamped business-sized envelope to FEEA Scholarship, 8441 W. Bowles Ave., Suite 200, Littleton, CO, 80123-9501.

EXCELLENCE IN AVIATION AWARDS

The FAA has issued a call for nominations for its Excellence in Aviation Award. Through this award, the FAA formally recognizes significant accomplishments as a result of aviation related research efforts. This special distinction is intended to augment the ability of the government to recognize superior research efforts and to highlight benefits of such activities.

The Excellence in Aviation designation is a highly competitive, non-monetary award that is presented annually to individuals and/or institutions following an evaluation of documentation which clearly shows how their past research benefits the aviation community today. Nominees must be able to show significant impact and benefit of extended aviation research efforts and application of improvements within the aviation industry.

This is the fourth year that the agency will be presenting this prestigious award. Each year the nominee pool has grown, reflecting a broad spectrum of aviation-related research activities. Nominations and supporting documentation for the 2000 Excellence in Aviation Award will be accepted through May 1, 2000. For additional information on the Excellence in Aviation Award or to receive a nomination form, please contact Denise Davis, FAA's Office of Aviation Research, at (202) 267-9426 or by email at denise.davis@faa.gov.

Last year, the FAA selected Embry-Riddle Aeronautical University to receive the Excellence in Aviation Award for its continued contributions in aviation research and education. For more than seven decades, Embry-Riddle has supported the FAA mission and the nation's aviation goals through its applied aviation research activities and ongoing academic programs. Working with both government and industry, the university has made valuable contributions in areas such as air traffic management, aviation human factors, pilot education and training, aircraft maintenance, and airframe design and technology.

The University of North Dakota's John D. Odegard School of Aerospace Sciences received the 1998 institutional award for its over 30 years of innovative aviation research, education and training programs. Dr. Satya N. Atluri, a professor at the

NOMINATIONS FOR EXCELLENCE IN AVIATION AWARDS

University of California, Los Angeles, received the 1998 individual Excellence in Aviation award. Dr. Atluri has had a significant impact on the aviation research community through his pioneering studies on structural integrity and damage tolerance of commercial and military aircraft, the establishment of widespread fatigue damage thresholds for aircraft, residual strength of aging aircraft with wide-spread fatigue damage, and life-enhancement of aging aircraft structural components through composite patch repairs.

In 1997, the agency selected the Joint University Program (JUP) on Air Transportation Research, a consortium comprised of the Massachusetts Institute of Technology, Ohio University, and Princeton University, to receive the agency's first Excellence in Aviation award. That year, the JUP celebrated its 25th year of research, providing both the FAA and NASA a high return on investments. The three universities are conducting cutting-edge research on a variety of aviation topics, such as intelligent flight control systems, weather hazard avoidance, satellite navigation, cockpit displays, and intelligent air traffic management.

TSP NEWS

The Federal Retirement Thrift Investment Board, which administers the $95 billion Thrift Savings Plan (TSP), has delayed the availability of two new TSP funds.

The Board originally expected to provide employees enrolled in TSP an opportunity to invest in small cap and international funds on May 1. Employees will now have to wait until October 1, while a new record-keeping system is tested.

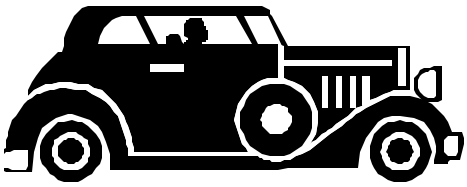
NEED A QUICK FACT?

Do you know where to get quick facts on things such as flight delays in the NAS, passenger miles flown in the U.S., which towers are the busiest? You can find this, and other information on airports, airmen, aircraft, as well as other interesting tidbits in the *Administrator's Fact Book*, which is published monthly.

You can now access the Factbook on the FAA website at http://www.faa.gov. Just click on "newsroom," scroll down to "reports, publications, and documents," and then click on "Administrator's Fact Book."

Now it will be easy to impress friends and family with your keen knowledge of the FAA and the NAS. Just to get you started -- did you know that in Febraury 1999 there were 19,851 flight delays, and in 1998, there were more than 605 billion passengers miles flown?

POV TRAVEL REIMBURSEMENT



The General Services Administration (GSA) has increased the mileage reimbursement rate for use of a privately-owned vehicle (POV) on official travel. The rate has increased from 31 cents to 32.5 cents per mile to reflect costs of operating a car, as determined in a cost study conducted by the GSA.

Mileage rates for privately-owned airplanes and motorcycles remain unchanged at 88 cents and 26 cents per mile repsectively.

For more infomration contact Loretta Rollins at (202) 267-7360.

CELEBRATING THE WRIGHT BROTHERS

How long was the Wright Brothers first powered flight? You're right . . . about 12 seconds, at Kill Devil Hills, Kitty Hawk, NC. This is what Atlantic City High School's science club and physics students learned on December 17, which was the 96th anniversary of the first powered flight.

In celebration of that day, **Carleen Genna-Stoltzfus**, Aviation Education Program Manager (ACT-70), developed a program which included several workshops: Principles of Flight; Building Rockets and then launching them; flying flight simulators; and visiting the Voice Switching Control System (VSCS) lab.

The students and the media who spent the day at the Center were returned home extremely enthusiastic about aviation. As one student wrote to Carleen, "the day was filled with educational, but fun events." Another stated "the best part of the day was just learning about the Technical Center itself, I had always heard about it but never knew what went on there. Thanks again, it was really cool!"

Carleen would like to thank the following for their support in making this day a HUGE SUCCESS: **Ron Esposito** (ACT-3); **Robert Testa** (ATC Tower); **Robert Vaughan** (ATC Tower); **Ginger Cairnes** (ACT-70); **Karen Cicatiello** (ACT-70); **Carolyn Pokres** (ACT-70); **Rodger Mingo** (ACT-1A); **Holly Baker** (ACT-5); **Dave Maslanka** (ACT-600); **Annette Harrell** (ACT-73); **Carol Martin**, Art-Z Graphics (ACT-73); **Verna Artis** (ACT-73); **Dan Greis** (ACT-70); **Bob Heitsenrether** (ACT-600); **Ken Stroud** (ACT-614); and special thanks to **Ernie Pappas** (ACT-73), who gave up going to his holiday party so that he could take photographs of this event.

COTS ANYONE?

As an increasing number and variety of commercial-off-the-shelf (COTS) software packages become available, it is important to understand the tradeoffs involved in buying and integrating these products versus developing custom software. Estimating the full life-cycle cost of these alternatives is a significant consideration. The Software Engineering Resource Center (SERC) is sponsoring development of a model for estimating the development and maintenance costs of COTS-intensive systems. The model, called COCOTS (Constructive COTS), is being developed by Dr. Barry Boehm and Chris Abts of the University of Southern California. The SERC is looking for FAA projects to contribute development and/or maintenance calibration data as well as projects to serve in pilot uses of the model. The SERC is also looking for any persons who are interested in working on the COCOTS project or in participating in workshops addressing maintenance issues.

Data collection on COTS acquisition costs began in 1997 and was completed in 1999. The COCOTS model has been calibrated with data from thirteen FAA projects and projects from the Army, Navy and Air Force. Efforts in FY 2000 are focused on the collection of data covering the full life-cycle costs of COTS. Data collection is being led by Dr. Elizabeth Clark of Software Metrics Incorporated.

The model estimates the cost of four COTS-integration activities. They are:

- Evaluating COTS packages as part of the requirements definition process,
- Configuring packages through such activities as parameter initialization and script generation,
- Developing integration "glue code", and
- Dealing with new releases of COTS products.

By participating in this effort, you will be helping all the FAA to improve cost estimates of COTS solutions in the future. To find out more, please contact **Patrick Lewis**, SERC Program Director, at (609) 485-9000.

OOPS!

In the last issue of *Intercom,* we reported that **Wanda Harris** was the winner of the ACT-200 CFC raffle. **AOS-500**, not ACT-200, sponsored that raffle.

We apologize for the error.

INTERCOM SUBMISSIONS

Don't forget!

Please try to get *Intercom* submissions (articles, photos, ideas) to Terry Kraus via email by the second Tuesday of every month.

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